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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,287	07/30/2003	Robert T. George	ITL.1004US (P16592)	9711

7590 12/15/2005

Timothy N. Trop
TROP, PRUNER & HU, P.C.
SUITE 100
8554 KATY FREEWAY
HOUSTON, TX 77024-1841

EXAMINER

PATEL, NIKETA I

ART UNIT PAPER NUMBER

2181

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/630,287	Applicant(s) GEORGE ET AL.	
	Examiner Niketa I. Patel	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/1/04, 11/12/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Zuraski et al.

U.S. Patent Number: 6,510,508 B1 (hereinafter “*Zuraski*”).

3. **Referring to claims 1, 6, 11,** *Zuraski* teaches a method comprising: invalidating an entry of a filter coupled to a pipeline resource if an update to the entry occurs during a context [see column 9, lines 30-45 and column 11, lines 14-20]; and flushing a portion of the pipeline resource corresponding to an address space including the entry [see column 9, lines 48-61.]

4. **Referring to claim 2,** *Zuraski* teaches further comprising flushing the portion upon a switch from the context [see column 11, lines 1-20.]

5. **Referring to claims 3, 9, 18,** *Zuraski* teaches wherein the pipeline resource comprises a translation lookaside buffer [see column 9, lines 30-45 and figure 2, element 39, ‘TLB’.]

6. **Referring to claim 4,** *Zuraski* teaches further comprising comparing an address obtained from an external snoop to a plurality of entries in the filter to determine if the update has occurred [see column 10, lines 1-17.]

7. **Referring to claim 5,** *Zuraski* teaches further comprising flushing the portion of the pipeline resource via microcode [see column 4, lines 11-29.]

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8. **Referring to claims 7, 12, *Zuraski* teaches further comprising selectively flushing the portion of entries upon a switch from the context [see column 9, lines 48-61.]**
9. **Referring to claim 8, *Zuraski* teaches wherein the portion of entries comprises an address space corresponding to the context [see column 1, lines 29-41.]**
10. **Referring to claims 10, 13, 15, *Zuraski* teaches further comprising invalidating entries of a filter coupled to the translation lookaside buffer corresponding to the portion of entries [see column 11, lines 14-20.]**
11. **Referring to claim 14, *Zuraski* teaches a method comprising: loading an entry into a pipeline resource of a processor, the entry corresponding to a page table [see column 1, lines 29-41 and column 9, lines 30-67]; and selectively updating the entry in the pipeline resource if the page table is updated during a context [see column 11, lines 1-20 and column 9, lines 30-67.]**
12. **Referring to claim 16, *Zuraski* teaches further comprising preserving the updated entry in the pipeline resource on a context switch [see column 11, lines 1-20, 46-65.]**
13. **Referring to claim 17, *Zuraski* teaches an apparatus comprising: a pipeline resource having a plurality of address spaces, each of the plurality of address spaces corresponding to one of a plurality of contexts, the plurality of address spaces selectively flushable [see column 1, lines 29-41 and column 9, lines 30-67.]**
14. **Referring to claim 19, *Zuraski* teaches further comprising a filter coupled to the pipeline resource to select at least one of the plurality of address spaces to be flushed [see column 9, lines 30-67 and figure 2, element 40.]**
15. **Referring to claim 20, *Zuraski* teaches wherein the filter comprises a content addressable memory [see figure 3, elements 40, 402, 'CAM'.]**

16. **Referring to claims 21, 25, *Zuraski*** teaches a method comprising: dynamically partitioning a filter of a pipeline resource into a plurality of partitions [see column 10, lines 27-65.], each of the partitions corresponding to one of a plurality of address spaces [see figure 3, elements 402 and column 10, lines 27-40.]

17. **Referring to claims 22, 26, *Zuraski*** teaches further comprising sharing the pipeline resource among a plurality of applications, each corresponding to one of the plurality of address spaces [see column 1, lines 22-41.]

18. **Referring to claim 23, *Zuraski*** teaches wherein each of the plurality of partitions includes a fixed portion and wherein the filter further comprises a dynamic portion [see column 2, lines 36-51.]

19. **Referring to claims 24, 27, *Zuraski*** teaches further comprising allocating at least part of the dynamic portion to one of the plurality of applications that has consumed the fixed portion of one of the plurality of partitions [see column 10, lines 27-65.]

20. **Referring to claim 28, *Zuraski*** teaches a system comprising: a first processor having a pipeline resource having a plurality of address spaces [see column 14, lines 1-5, 'processor'], each of the plurality address spaces corresponding to one of a plurality of contexts [see column 9, lines 30-45 and column 1, lines 29-41], the plurality of address spaces selectively flushable [see column 9, lines 48-61]; and a dynamic random access memory coupled to the first processor [see column 14, lines 6-11, 'DRAM'.]

21. **Referring to claim 29, *Zuraski*** teaches further comprising a second processor coupled to the first processor [see figure 3, element 406.]

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22. Referring to claim 30, *Zuraski* teaches further comprising a filter coupled to the pipeline resource to snoop address information from the second processor [see figure 3, elements 'snoop address,' 406, 40.]

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents have been made record of to further show the state of the art as it pertains to TLB flush filter:

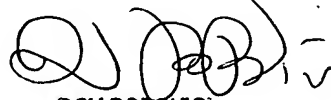
Baldwin U.S. Patent Number: 6,650,333 B1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Niketa I. Patel whose telephone number is (571) 272 4156. The examiner can normally be reached on M-F 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici can be reached on (571) 272 4083. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NP
12/05/2005


DOV POPOVICI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100